

## The theoretical modeling for perillartine electrochemical determination in drinks, assisted by nickel oxide nanoparticles

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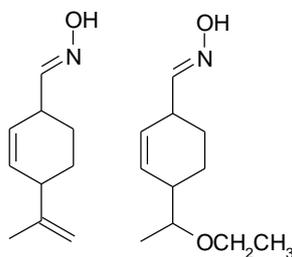
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**Perillartine (Fig.1) (perillaldehydeoxime) is a natural sugar substitute, extracted from Japanese perilla (shiso) leaves [1]. It is considered twice as sweet as sucralose, four times as sweet as saccharine and 2000 times as sweet as sucrose.**

**Besides of the proper perillartine, its ether derivative is also used, despite of being much less sweet than the proper perillartine (possessing the sweetness, nearly equal to that of aspartame).**



**Fig. 1. Perillartine and its ether derivative**

**This oxime is bioavailable and biodegradable, contrarily to the synthetic sweeteners like aspartame, saccharine and sucralose. Moreover, it isn't considered toxic or dangerous for the environment.**

**Nevertheless, it may be allergic for people allergic to shiso herb. Also, some toxic nitrogen derivatives like hydroxylamine may form during its metabolism in some people. It is important to mention that perillaldehyde aldoxime and its derivatives are rarely used as sweeteners outside Japan, so this statement may be used in investigation of falsification of allegedly Japanese product claimed to contain the perillartine. Thus, the development of an efficient, exact and rapid method for perillartine determination is really actual task, and the electroanalytical methods would give it a good service.**

**A mathematical model has been described for the electroanalytical process with perillartine determination over NiO nanoparticles. The electroanalytical process will be mostly kinetically-controlled with the possibility of the transfer to diffusion-controlled mode. On the other hand, both oscillatory and monotonic instabilities will be conditioned to ionic form transformations in DEL.**

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